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THE NEW ENGLAND BOTANICAL CLUB

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CITY BOTANIZING.

William P. Rich.

It is commonly believed that the botanical collector must of necessity get away from the city to find material for his studies and that the open fields and woodlands of the country are the only places of interest to him in the pursuit of his favorite avocation.

It is one of the advantages, however, of plant collecting that the botanist is not always obliged to travel far to find objects of interest to him. If, by reason of the exacting requirements of his daily occupation, he is unable to visit new fields in distant regions during the flowering season, he can generally find close at hand abundant sources of interesting and profitable employment.

There are few localities that will not yield some plants worthy of record, the consideration of which will repay the local botanist for the time devoted to them, and even within the city's limits will be found collecting grounds that may well engage his attention.

In this connection I cannot refrain from referring to a paragraph in an address delivered in 1816 by Stephen Elliott, the author of the "Botany of South Carolina and Georgia." Speaking of his favorite study he said "It has been for many years the occupation of my leisure moments; it is a merited tribute to say that it has lightened for me many a heavy and sometimes many a rugged hour; that beguiled by its charms, I have found no road rough or difficult, no journey tedious, no country desolate or barren. In a solitude never solitary, in a desert never without employment. I have found it a relief from the languor of idleness, the pressure of business, and even the unavoidable calamities of life."

To the sentiments so well expressed in this quotation I am moved to

add the city's claim as a desirable field of botanical observation, and to call attention in this article to some of the plants collected in Boston during recent years which have been of interest to me. The localities mentioned are not those of suburban districts but are in close proximity to busy streets or residential avenues of the city proper.

The first time I ever found *Ranunculus sceleratus* L. was in the ditches along the old Providence Railway, near Newton Street. It grew there abundantly along with *Lemna minor* L. until the draining of the ditches exterminated it and I have seldom met with it since in more extended explorations. My first collection of *Setaria verticillata* Beauv. was in a front yard on Mount Vernon Street, and this also has been infrequently met with. *Chenopodium glaucum* L. I collected for the first time in the crevices of the brick sidewalk on the edge of the Public Garden, and in the last few years *Galinsoga parviflora* Cav. var. *hispida* DC. has been growing freely at the base of the granite wall at the Church Street entrance to the Subway.

But it is the vacant lots and dumping grounds of the city that furnish the city botanist with an almost inexhaustible supply of material. On every visit something new and strange will be seen, perhaps disappearing in a few days, to be replaced by other surprises.

There are two localities in Boston which have proved sources of continual botanical interest for a number of years. One of these, the South Boston flats, now mostly occupied as a railway terminal, has furnished many interesting species, the enumeration of which would require another article and may be left for future presentation.

The other locality is the Back Bay lands and a list of some of the more noteworthy plants collected here at various times in recent years is the principal object of this sketch.

This region, formerly a salt marsh, has been filled in with gravel brought from the neighboring town of Needham. The streets are filled up to city grade, leaving many vacant lots, in some of which the original solid marsh still remains.

For a few years, while the filling was in progress, many native plants and shrubs, brought in with the gravel, maintained their existence, but, at length, most of them succumbed; apparently unable to meet the competition of the hosts of cosmopolitan weeds which soon overran the entire region and now flourish in the greatest luxuriance, forming jungles of vegetation in many of the lots.

The establishment and planting of the Back Bay Fens in later years

have been the sources from which many of the more conspicuous plants herewith mentioned have been doubtless derived. Some of them thrive for a few seasons and disappear while many seem to have taken up a permanent abiding place here, and only the inevitable course of the city's growth will finally destroy them.

In the accompanying record only those plants, for the most part, that are likely to attract the attention of the passer-by or that are of especial botanical interest are noted. The many species of the ordinary weeds and grasses and those that are commonly found elsewhere are omitted.

Perhaps the first flowering plant of the season that will attract notice, other than the willows and poplars, is the *Petasites vulgaris* Desf., one of the coltsfoots. It has flourished on a damp gravelly bank for at least eleven years, sending up in April and May numerous thick, naked flower stalks, succeeded later in the season by enormous leaves a foot and a half in diameter.

In the early part of the summer few plants of especial note are prominent and it is not until later in the season that the richness of the flora is manifested.

In June I have recorded the following species in flower:

Amorpha fruticosa L., a shrub five or six feet high; *Lonicera Morrowii* Gray, rather frequent; *Desmodium Canadense* DC.; *Ptelea trifoliata* L., abundant as a small tree; *Amsonia Tabernaemontana* Walt., a bushy, herbaceous plant, about three feet in height, with milky juice and bluish flowers; and *Coronilla varia* L., very abundant and covering broad areas of gravelly banks with its profusion of rose-colored blossoms.

An Astragalus, growing in one of the lots on Boylston Street, has attracted attention during the past two years, and has been collected in flower and fruit. It has been identified by Prof. M. L. Fernald of the Gray Herbarium as *Astragalus glycphyllos* L. It is a European plant and is probably one of the escapes from the neighboring Back Bay Fens.

In June, 1907, I came across a clump of a trailing, raspberry-like plant with a profusion of small, pale-red flowers. I watched it from week to week until it fruited, to make sure that it belonged to the raspberry section of the genus Rubus. I could find no description of such a plant in any of the horticultural lists or botanical manuals and it was at length identified by Mr. Alfred Rehder of the Arnold Arboretum

as *Rubus triphyllus* Thunberg, a species from Japan. It is still flourishing the present year.

Another Rubus growing here has for several years greatly interested me. It is a coarse-leaved prostrate plant but with the inflorescence and fruiting racemes of the high-bush blackberry, *Rubus argutus* Link. It seems to answer very well to the description of *Rubus villosus* Ait., var. *humifusus* T. & G. of Gray's Manual.

In this month the Russian thistle, *Salsola Kali* L. var. *Tragus* Moq., begins to show itself and is more characteristic in its early stages and differs more from its close relative, the seashore species, than it does later in the season. *Sisymbrium altissimum* L., a comparatively recent immigrant to this part of the country, is also becoming abundant and will be very much in evidence, especially in its later stages of development as a "tumble weed," for the rest of the season.

The July list could be greatly extended by the inclusion of many species that are common outside of the city as well as here, and I shall mention only those in which I have been particularly interested or which are of sufficient importance for botanical record.

Lysimachia vulgaris L. grew abundantly at one time in a vacant lot near where now stands the Institute of Technology on Boylston Street, and not far away from it was a little colony of *Euphorbia marginata*, Pursh. *Heracleum villosum* Fisch., probably thrown out from the Park, has taken possession of several corner lots and is one of the most conspicuous plants in the entire region. *Echinops sphaerocephalus* L., the globe thistle, and *Polygonum cuspidatum* S. & Z., also outcasts from the Park, appear to be happy and thriving in their new locations on the gravelly banks and can be found in many different places. A few plants of *Genista tinctoria* L. were seen in 1906 and in the same season Mr. C. H. Knowlton called my attention to *Epilobium hirsutum* L. which he had discovered in one of the lots.

Another interesting find made July 18, 1906, in company with Mr. Knowlton, was a single plant of *Polygonum arenarium* W. & K. This, as far as I can learn, is the first published report of this species in Massachusetts, although a specimen I collected in July, 1899, on the South Boston flats appears to be the same. *Brassica Sinapistrum* Boiss. and *Brassica juncea* Cosson both grow here, the latter species, however, much more abundant.

The list for August is a long one in my records and must be abbreviated here. *Sida Napaea*, Cav. with its white flowers and maple-like

leaves grows in scattered colonies to a height of six and eight feet and near by can be usually found dense masses of *Bocconia cordata* Willd. attaining an equal height. Various species of sunflowers enliven the masses of vegetation, the most interesting among them being *Helianthus tuberosus* L., *Helianthus strumosus* L., and *Silphium perfoliatum* L., the last species being especially conspicuous. *Inula Helenium* L. has been noticeable in one of the lots for several years.

Polygonums occupy large areas, the principal species being *Polygonum Pennsylvanicum* L., *P. lapathifolium* L., *P. Persicaria* L., and frequently *P. orientale* L. Both species of Datura are found, *D. Stramonium* L. and *D. Tatula* L., and the velvety-leaved *Abutilon Avicennae*, Gaertn. is occasionally seen. *Lespedeza capitata* Michx. is abundant and *Senecio vulgaris* L. and *S. viscosus* L. have been collected. *Ipomoea hederacea* Jacq., *Petunia nyctaginiflora* Juss., *Campanula rapunculoides* L., and the canary grass, *Phalaris Canariensis* L. can be usually found this month on dumping grounds. *Artemisia caudata* Mich. is abundantly distributed over the gravelly levels and, occasionally, in damp places, a few plants of *Lythrum alatum* Pursh. have been seen. The large-headed burdock, *Arctium Lappa* L. var. *majus* Gray, is somewhat frequent on gravelly banks.

Cyperus speciosus Vahl. I first collected here in August, 1879, and it was still in existence in August of the present year. Among the numerous grasses are *Panicum miliaceum* Willd., *Panicum Walteri* Pursh, *Eragrostis Purshii* Schrader, *Bromus tectorum* L., and *Phragmites communis* Trin. The Phragmites I think must be of comparatively recent introduction as it has not yet attained the flowering stage. It is also abundant and spreading in the South Boston locality.

September is, perhaps, if a choice must be made, the best month of all for this kind of botanizing. Most of the August plants are still lingering in flower, while belated species are pushing forward to complete their cycle of life. Noteworthy among the Compositae at this season are *Aster Novae-Angliae* L. and *Aster subulatus* Michx., the latter species very abundant in the marshy lots. In September, 1879, I found *Helianthus rigidus* Desf., but it has been long since covered up. *Pluchea camphorata* DC., one of our native plants, still maintains itself in certain lots. *Artemisia biennis* Willd., mentioned in the Sixth Edition of Gray's Manual as rapidly extending eastward from the West, has since that time arrived in Boston and is now common,

and *Bidens vulgata* Greene, which a few years ago I thought rare is abundant on every hand.

Polygonum prolificum Robinson is plentiful in damp ground inside the Park, and in 1905 Mr. Henry A. Purdie brought me specimens of *Polygonium exsertum* Small from the same place, where I have seen it every year since. Last year I came across a few plants of what I make out to be *Chenopodium Boscianum* Moq., the only time I have ever collected it. *Chenopodium Botrys* L. is occasionally found and *C. ambrosioides* L. var. *anthelminticum* Gray is abundant. *Rumex pallidus* Bigelow has been collected several times and *Amarantus blitoides* Watson, forming flat mats in waste ground, can generally be found this month. *Cassia Chamaecrista* L., *Urtica dioica* L., *Pycnanthemum lanceolatum* Pursh, and *Echinocystis lobata* T. & G. are occasionally met with. *Euphorbia Esula* L. grew here some twenty or more years ago but has now disappeared.

Last year Mr. Purdie called my attention to a goldenrod which he found somewhat puzzling. I made it out to be *Solidago asperula* Desf. and the identification was afterwards verified by Prof. Fernald of the Gray Herbarium. These particular plants seem to have more of the *rugosa* character in them than is usual with those I had heretofore seen, and I am more than ever of the opinion, of which there has long been a suspicion that the so-called *Solidago asperula* Desf. is really a hybrid of *S. sempervirens* L. and *S. rugosa* Mill.

Two shrubs whose origin here can be directly traced to the neighboring Park are becoming noticeable in several of the lots. They are *Baccharis halimifolia* L. and a Tamarix, the species of which I am not sure of. Another herbaceous plant, probably from the same source, is conspicuous with its handsome blue flowers on several gravelly banks in August and September. My first identification of it was *Lycopsis arvensis* L., but Dr. E. H. Eames of Bridgeport, Connecticut, to whom specimens had been sent, pronounced it *Anchusa officinalis* L., which is probably correct. These two species bear very close superficial resemblances.

The nomenclature used in this list is mostly that of Gray's Manual, Sixth Edition, while the names of the garden plants mentioned are those in common use by horticulturists.

I look forward with interest to continued investigation of the flora of this region while it lasts. But the area is being gradually restricted as section after section is built upon and the time is not far distant when

all that will remain of its present profusion of plant life will be the specimens in the herbaria of the few collectors interested in city botanizing.

Boston, Massachusetts.

NOTES ON ALGAE. IX.

F. S. Collins.

Gloeocystis scopulorum Hansgirg in Foslie, Contributions to knowledge of the marine algae of Norway, I. East Finmarken. Tromso Museums Aarshefter XIII, p. 155, 1890. This species was described by Hansgirg from material sent him by Foslie, collected in northern Norway; the material was found in clefts of rocks at high water mark and contained a number of minute forms, some of which Hansgirg described as new, while he identified others with already described species. Prof. Foslie has kindly furnished the writer with some of these forms, among them *G. scopulorum*. It forms gelatinous masses of greenish yellow color with cells 4–6 μ in diameter, united in colonies of two to eight cells, with distinctly stratified envelop. At Ragged Island, off Harpswell, Maine, in July, 1908, the writer found in a warm-water pool, above high water mark, among various small green and blue-green algae, an organism agreeing exactly with Foslie's specimen. But it is well known that in stations of this character plants often undergo strange transformations, *Ulothrix*, for instance, assuming Palmella and Gloeocystis forms that no one would connect with the normal form unless by observing the transitions. One can hardly resist the suspicion that *G. scopulorum* is some such stage of a *Ulothrix* or a *Urospora*, which are common in such stations in spring.

Protococcus ovalis Hansgirg, l. c., p. 159, Pl. III, fig. 12. Another doubtful form occurring in similar stations with the last mentioned species. The cells are ovoid or ellipsoid, 8–10 $\mu \times$ 9–12 μ, with thin wall and yellow-green contents, solitary or congregated in a formless, not specially mucilaginous layer. At the Ragged Island locality a form occurred agreeing with this description, and with the specimen from Foslie.

Pilinia endophytica n. sp. For several years the writer has been puzzled by a small green alga, endophytic in *Ralfsia Borneti* Kuckuck, a common *Ralfsia* along the New England coast on live mussels and *Lithothamnion* in tide pools, occasionally occurring on rocks. In July of the present year, while the writer was dredging in Harpswell Sound, Maine, a stone was brought up from about five meters depth at low water, on which was a growth of *Ralfsia*, in which the endophyte occurred rather more abundantly than usual; while the description that can now be made leaves something to be desired, at least it can be put on record and attention called to the plant, so that further investigation can be hoped for. It may be characterized as follows:—

Fronde formae indefinitae, filamentorum plerumque brevium, simplicium vel ramosorum, sistente, inter filamenta plantae hospitis serpentium; cellulis quoad formam et magnitudinem variantibus, cylindricis, clavatis, subsphaericis, vel irregularibus, 7–22 μ diam., 1–5 diam. longis; chromatophora laete virente, cellulam complente, vel plerumque cupuliformi, partem superiorem cellulae occupante. Sporangiis terminalibus, sphaericis vel ovoideis, ad 30 μ diam., sporas numerosas foventibus.

Frond of no definite form, consisting of usually short, simple or branched filaments, creeping among the filaments of the host; cells variable in form and size, cylindrical, clavate, subspherical or irregular, 7–22 μ diam., 1–5 diam. long; chromatophore light green, sometimes filling the cell, more commonly cup-shaped, at the upper end of the cell. Sporangia terminal, spherical or ovoid, up to 30 μ diam., containing numerous spores. In fronds of *Ralfsia Borneti* Kuckuck, Harpswell, Maine, July, 1908. Type in herb. F. S. C.

The placing this species in the genus *Pilinia* might be considered somewhat intuitional, as the vegetative characters are so vague; but imperfect and stunted as the filaments are, their appearance recalls that of undoubted Pilinia species. The occurrence of the terminal sporangium seems to confirm this, but the form must be regarded as greatly modified by the endophytic habit. All distinction between vertical and horizontal filaments is lost, and the cells are very irregular in shape and size; sometimes a filament will be found of six or seven cylindrical or slightly clavate cells, 2–5 diam. long, quite as in typical Pilinia species, but this is unusual. Whether the sporangia produce zoospores or aplanospores could not be determined. The nearest relation of this species would seem to be *P. minor* Hansg. If we may imagine a descent from the latter, from living free on pebbles to living

among the firm and closely packed filaments of the *Ralfsia*, the disappearance of the now useless basal, attaching filaments, and the irregular form of what remains, seem not unnatural. The host is found all along the New England coast from Bridgeport, Connecticut to Cutler, Maine, and whenever it has been examined for the endophyte, the latter has been found.

Pringsheimia scutata Reinke. When the writer was collecting at Eastham, Massachusetts, Aug. 16, 1908, at "The Salt Pond," really the head of a bay among salt marshes, the Zostera growing there abundantly was found to be the host for many of the smaller species of algae; most of these were familiar and require no comment, but it was of interest to note *P. scutata*, of which only a single record appears for this coast.[1] Here it was not uncommon, and a set for distribution in the Phycotheca was easily obtained. The plant forms minute, rounded, thin, pale green dots on the Zostera, barely perceptible to the naked eye, but easily distinguished by the hand lens.

Ochlochaete ferox Huber, Ann. Sci. Nat., Series 7, Bot., Vol. XVI, p. 292, 1892. In looking over the material mentioned in the last paragraph, it was noticed that some spots were of a much deeper green color than the others, and microscopic examination showed quite a different structure. In *Pringsheimia* there is originally a thin disk of laterally united radiating filaments, later developing another layer in the middle part of the disk, the cells of this second layer rounded but with no outgrowths. In the other form the frond consists of a densely packed mass of cells, with no indication of radiating filaments; the cells are ovoid or flask-shaped, vertically elongate, and terminate each in a long colorless hair. These characters identify it with *O. ferox*, not before recorded for America. Though not quite as frequent as the *Pringsheimia*, enough was found for distribution in the Phycotheca Boreali-Americana, and both species will appear in Fascicle XXXI.

Sphacelaria fusca C. Ag., Sp. Alg., Vol. II, p. 34, 1828. This species, though dating from so long ago, was always a matter of doubt until Sauvageau,[2] brought forward the characters that distinguish it from the common *S. cirrhosa* (Roth) Ag. The latter species is abundant on the New England coast from Cape Cod south, and is occasionally found, usually in warm, sheltered bays, as far north as the Gulf

[1] Collins, Bull. Torrey Bot. Club, Vol. XVIII, p. 340, 1891.
[2] Sauvageau, Jour. de Bot., Vol. XVI, p. 209, 1902.

of St. Lawrence. June 16, 1907, the writer found on the bay shore of Eastham, Massachusetts, growing on a spider crab, *Libinia canaliculata* Say, what appears to be *S. fusca*. *S. cirrhosa* is a variable species, and as regards most characters it is hard to draw a line between it and *S. fusca*; the most conspicuous character is found in the propagula; in *S. cirrhosa* the three rays are sharply contracted at the base; in *S. fusca* there is no such contraction, the rays being cylindrical or tapering slightly from base to summit.

Petrocelis Middendorffii (Rupr.) Kjellman, Algae of the Arctic Sea, p. 140, 1883. The first notice of the occurrence of *Petrocelis* on the New England coast is by Farlow [1] under the name of *P. cruenta* J. Ag.; this name has since been retained in all references to the plant of this region. A comparison with a specimen from Cherbourg, France, collected and determined by Le Jolis, shows so much difference that the two cannot be considered as belonging to the same species. The frond in *Petrocelis* forms an incrustation on rocks at or near low water mark on exposed shores; it is thin but not as thin as the frond of the common *Hildenbrandtia prototypus* Nardo; the latter is more or less translucent, the color being a lighter or darker red according to the color of the substratum. The Petrocelis frond is quite opaque and usually of a duller red. It consists entirely of vertical filaments, in which two parts can be distinguished; a lower layer in which the filaments are firmly united laterally, and an upper layer in which they are in contact, but do not adhere. On the top is a relatively firm cuticle. When the cover glass is pressed down on a bit of the plant under the microscope, it is common for the filaments of the upper part to be held by the basal part below and by the cuticle above, while separating easily between. In the European plant the basal part is only a small portion of the whole thickness, while in the New England plant it is seldom of less thickness in a mature plant than the upper part, and often it is two thirds of the whole thickness. In the European plant the cells of the free filaments are moniliform, 1–2 diam. long, about 8 μ diam. at the base, diminishing to 4 μ at the top. In the American plant the filaments are cylindrical or only slightly tapering, 3–4 μ diam., cells up to 3 diam. long. These characters indicate that our plant is *P. Middendorffii*, a plant probably of circumpolar distribution, as it occurs in Norway, and in the Pacific from Alaska to California.

[1] Farlow, N. E. Marine Algae, p. 115, 1881.

That the distinction has not before been made is not unnatural; our plant does not grow on small or loose stones, it seems to prefer the hardest rock, seldom occurring on soft or crumbling rocks, where it could be easily removed. It cannot be scraped off without reducing it to a shapeless mass, but a knife must be used, and unless special care is taken, the greater portion of the basal part is left on the rock. In material so obtained the difference between the basal part and that of *P. cruenta* is not noticeable. The material distributed in P. B.-A., No. 899, is of this character; it is intended to distribute another lot, of more perfect material, which will show the identity with the *P. Middendorffii* of the west coast, distributed as P. B.-A., No. 900.

The tetraspores of *Petrocelis* are formed by transformation of cells of the upper part; in *P. cruenta* and *P. Middendorffii* one cell in a filament is so transformed, rarely two cells. In *P. Hennedyi* (Harv.) Batters of northern Europe the tetraspores are seriate, often occupying a considerable portion of the filament; this species may occur with us. Unfortunately, spores in *Petrocelis* are rare, except in winter, which is not a pleasant time to collect on exposed shores at low water mark. The writer has examined specimens of *Petrocelis* from Nahant and Magnolia, Massachusetts; from Mount Desert Island, Cutler, several points in Penobscot Bay and several points in Casco Bay, Maine; after allowing for the effect on the basal layer of the manner of collecting, they agree very closely; specimens from Scotland and England agree equally well with Le Jolis' plant. The writer formerly reported *P. cruenta* as occurring in Southern Massachusetts;[1] a re-examination of the specimen shows that it is not a *Petrocelis*; so that as far as our records go, the genus is limited to the region north of Cape Cod.

The marine flora of the New England coast from Cape Cod north is of a typical arctic character, but as is well known, there are exceptional stations where plants characteristic of more southern regions occur; such stations have been recorded at Weymouth and Quincy, Massachusetts,[2] Gloucester, Massachusetts,[3] Penobscot Bay, Maine.[4] At all these stations there is much variation from one year to another, apparently on account of the difference in temperature, etc., in different years. An early spring, followed by a warm summer, will bring an abundant development of characteristic southern forms, while

[1] Bull. Torrey Bot. Club, Vol. X, p. 56, 1883.
[2] Collins, Bull. Torrey Bot. Club, Vol. X, p. 29, 1884.
[3] Farlow, N. E. Marine Algae, p. 6, 1881.
[4] Collins, Rhodora, Vol. I, p. 69, 1899.

in a year in which the spring is late and the summer not warmer than the average few or none may appear. The past summer would seem to have been an ideal one for these plants, the excess of temperature above the normal for the year being about 400° at Boston on the first of August. The writer had an opportunity in July to observe two stations, not previously recorded in this respect, and the following notes may have some interest.

Along the New England coast as far north as Portland, Maine, salt marshes form quite a considerable portion of the shore, but beyond Portland they are less common. At Stover's Point in South Harpswell is a small salt marsh, separated from Harpswell Sound by a ridge of stones and gravel, through which there is a quite narrow and shallow opening. Except at spring tides the change of level in the numerous shallow pools of various size that are scattered through the marsh is slight, and the greater part of the water remains from one tide to another. In the hot days of last July the water in these pools was almost unpleasantly warm to the hand. The felty mass of algae, usual in such places, covered the smaller pools, and much of the surface of the larger pools. The composition of this mass was the common warm water combination, *Cladophora expansa* (Mert.) Kütz., *Rhizoclonium riparium* (Roth) Harv., *Lyngbya aestuarii* (Mert.) Liebm., *L. confervoides* Ag., *Enteromorpha intestinalis* (L.) Link, *E. crinita* (Roth) J. Ag., *E. Hopkirkii* McCalla, *Ilea fulvescens* (Ag.) J. Ag., and in less quantity *Pleurocapsa fuliginosa* Hauck, *Calothrix confervicola* (Dillw.) Ag., *C. scopulorum* (Web. & Mohr) Ag., *C. aeruginea* (Kütz.) Thuret. *Palmellococcus marinus* Collins, described from material collected here in 1906, was present this year, but in less quantity; and there was considerable of two blue-green algae, usually found only in fresh water, *Nostoc sphaericum* Vauch. and *Gomphosphaeria aponina* Kütz.

In the largest pool were floating many fragments of algae, naturally growing in exposed places, the same as are found washed up all along the shore; but in this warm water they had assumed a quite different appearance. *Chondrus crispus* (L.) Stack. was abundant, and the fronds had continued to grow with a luxuriance quite unknown before; fronds two or three dm. long were not uncommon, broad and richly branched, often with proliferous growths; the color pale red or yellow; evidently the environment was much to their liking. Common also were floating fronds of *Ahnfeltia plicata* (Turn.) Fries, but all were

dead; the normally dark and shining wiry fronds were a brownish yellow, and their surface was variegated with "collars" of *Ralfsia verrucosa* Aresch. The *Ahnfeltia* is common all along the Maine coast, as is also the *Ralfsia*, but the latter has never been observed to grow on the former under normal conditions. Luxuriant coatings of *Ralfsia* were found on the dead or dying floating fronds of *Fucus vesiculosus* L., *F. evanescens* Ag., and *Ascophyllum nodosum* (L.) Le Jolis. The *Ralfsia* formed a continuous coating on practically the whole surface of these fronds, though never occurring on them in their natural habitat, whether attached or floating.

The other locality noticed was at Ragged Island, about five miles off the Maine shore, between Cape Elizabeth and Cape Small Point. The island is about half a mile in diameter, the coast entirely rock cliff, often rising perpendicularly for some height. On the south side there are perpendicular rocks of this character, the top considerably above even the spring tides. From some peculiarity of this rock, there is a series of rather large and deep pools just back from the edge; into these pools a certain amount of fresh water drains from the neighboring part of the island, but the supply must be small; apart from this, and whatever rain falls into the pools, the only supply is from the surf breaking over the wall. During a gale this supply must be continuous, but in ordinary weather it is cut off. It is evident that a great range in temperature and salinity is possible here. If we suppose the pools filled by a storm, and then a long period of quiet weather without rain, the salinity must steadily increase. A rainfall would somewhat diminish it, but only a very heavy rain, sufficient to fill the pools and run over, could bring the salinity below that of the surrounding sea. The salinity would be higher than normal until a severe storm should throw in water enough to fill the pools several times over, practically replacing the contents with normal salt water. Whenever the pools were so filled, the temperature would be that of the sea, which here is very cool, even at midsummer, while in winter they would be undoubtedly frozen, and a few hot calm days in summer would bring them to a temperature reached by the sea only in the tropics. The list of permanent tenants of such a pool would be reduced to forms capable of enduring very salt water as well as the ordinary salinity, and both tropical and arctic temperatures. On the other hand, plants developing very quickly under favorable conditions, forming at once spores that will carry them through unfavorable condi-

tions, would delight in such a station, where there would be few or no all-the-year natives to compete with these summer visitors to the Maine coast.

On July 13, 1908, there was here an immense quantity of individuals, though not very many species; most of them were blue greens; *Polycystis elabens* Kütz., *Entophysalis granulosa* Kütz., *Gloeocapsa crepidinum* Thuret, *Oscillatoria tenuis* Ag., *Spirulina subsalsa* Oersted, *S. Meneghiniana* Zan., *Lyngbya aestuarii* (Mert.) Liebm., *L. semiplena* (Ag.) J. Ag., *L. subtilis* Holden, *Plectonema Battersii* Gom., *P. calothrichoides* Gom., *Anabaena torulosa* (Carm.) Lagerh., *Nodularia Harveyana* (Thwaites) Thuret, *N. spumigena* Mert., *Calothrix scopulorum* (Web. & Mohr.) Ag., *Amphithrix violacea* (Kütz.) Born. & Flah., and some forms of *Chroococcus* and *Plectonema* that have not been specifically determined. The green algae were *Enteromorpha intestinalis* (L.) Link, *E. Hopkirkii* McCalla, *E. crinita* (Roth.) J. Ag., *Cladophora expansa* (Mert.) Kütz., *Ilea fulvescens* (Ag.) J. Ag., and *Urococcus Foslieanus* Hansg. The *Entophysalis* was chiefly attached to the rocks; the *Calothrix* and *Amphithrix* to *Enteromorpha* and *Cladophora*; all the others were free and mingled in all proportions; sometimes in loose masses on the bottom, sometimes in rather denser masses at the surface; the color varying according to the proportion of the different species and to the exposure to light; the strata at the bottom, sheltered from the light, were mostly dark green or olive; those at the surface pale green, yellowish or almost white. The quantity was astonishing; at least half the surface was covered by the mats, and very little of the bottom could be seen. When we remember ~~than~~ an individual of *Polycystis* is about 3 μ diameter, about one ten-thousandth of an inch, while a filament of *Spirulina* is considerably less, the number of individuals in these pools, with a surface of perhaps an acre and a depth of several feet, would reach a figure with no real meaning to us. And there is no doubt that the entire quantity had developed since the beginning of the warm weather. The winter storms must sweep the pools clear of all such vegetation, except stray spores or resting cells in crevices or under ice.

The writer visited this station in 1903 and in 1906, each season in July, and the conditions were then much the same, but in 1908 the growth was considerably more luxuriant than before, and the level of the water decidedly lower, which of course meant increased salinity. The effect of the latter condition was seen in some abnormal appear-

ances in the Enteromorphas, which are most at home in ordinary sea water; in an increase in the Spirulinas, which are specially plants of lagoons and drying-up pools. Possibly these conditions may have induced the development of *Gloeocystis scopulorum*, mentioned earlier in this paper, from some Ulothrix which was here earlier in the season, but could not maintain its normal form under the summer conditions.

One species remains to be mentioned; *Chaetomorpha aerea* (Dillw.) Kütz. This is usually spoken of as a common species on the New England coast, and if we include under the name the free-floating form known as *C. Linum* (Fl. Dan.) Kütz., just as what has been known as *C. Picquotiana* (Mont.) Kütz. is now considered a free form of *C. Melagonium* (Web. & Mohr) Kütz., this opinion is undoubtedly correct; the *C. Linum* form abounds from Long Island Sound to Passamaquoddy Bay. But as to the attached plant, *C. aerea* in the older sense, the case is different. South of Cape Cod it is not uncommon and grows at low water mark and some distance above and below; but in 30 years collecting the writer has only twice found it north of Cape Cod, and in each case it was in a rock pool, at extreme high water mark; once at Cohasset, once at Marblehead, in both cases in small quantity. Here at the Ragged Island pools there was a dense growth around most of the edge, just below the water line; as densely packed as the grass in a lawn. The filaments were all quite short, and there was a white band of dead fronds, above the water level, considerably broader than that of living fronds below the level; evidently the environment had been exceptionally favorable to the species earlier in the season. In 1903 and 1906 nothing was seen of this species, and if we suppose that it is distinct from the floating *C. Linum*, it would be hard to account for its sudden appearance in such quantity; the currents here tend southerly, and the chance of a frond or a spore being brought from southern New England and thrown up by the waves into the pool would be very small. Even if this were possible, there must have been several generations of plants in a very short time to produce this dense growth for such a distance. But if we suppose that it arose from the floating form, which is abundant in the vicinity, the spores finding favorable conditions, similar to those of warmer regions, all is clear.

To sum up as regards these two stations:— even on shores where conditions are subarctic, individual stations may be found where the conditions for a short time are almost subtropical; in such stations the

number of species must be limited, but the number of individuals developed in a short time may be enormous; they will be mostly plants of very rapid development and of short life, and mostly of quite low organization; some plants, common in the subarctic waters may here assume a sudden luxuriance (*Chondrus*); some may also appear on a different substratum (*Ralfsia*); some may take on a habit so distinct as to be considered a separate species native to lower latitudes (*Chaetomorpha*).

Malden, Massachusetts.

A TRIP TO KILLINGLY, CONNECTICUT.

Clarence H. Knowlton.

After considering several other places for a one-day botanical excursion, Mr. L. J. Spalding and I finally decided on Killingly, Windham county, Conn. We were led to this by a study of the map, which revealed a diversified region ranging in elevation from 280 to 875 feet above sea-level, with brooks, ponds and hills. A previous reconnoissance in July, 1903, had shown us that the underlying rocks were sandstone and quartzite. We had also noted and collected several interesting plants at that time.

The day chosen (Aug. 23, 1908) was clear and cool after heavy rainfall, the vegetation was fresh, and walking easy. We left the cars at Attawaugan, and the first plant collected was *Commelina communis* L. It grew luxuriantly in the woods near Five-Mile River, on a bank which had been used as a dump at some time previous. The delicate blue flowers were still open, and the plant seemed to flourish in its adopted home.

The next accession grew abundantly in the millyard and by the roadside at Ballouville. This was *Euphorbia hirsuta* Wiegand, easily distinguishable from its nearest relative by its hairy stem, smooth fruit and peculiar seed. These specimens were not so nearly prostrate as *E. maculata* L. usually is.

We now left the villages and explored a large meadow, part of which had been mowed. In this part grew good specimens of *Parnassia Caroliniana* Michx., just coming into flower. In the uncut portion, along with many common plants, were *Pycnanthemum linifolium*,

Pursh, *P. lanceolatum* Pursh, and *P. muticum* Pers., all these closely allied species occupying the same territory, and showing no choice in the matter of soil or moisture. Later in the day we found the fourth New England representative of the genus, *P. incanum* Michx., growing in dry rocky woods. The prevailing alder in this meadow and throughout the town seems to be *Alnus incana* Willd., for I did not see any other during the entire day. *Calamagrostis Nuttalliana* Steud. also flourished in this meadow.

The road led from the lowland up the side of Break Neck Hill, and wayside glimpses of *Circaea alpina* L., the true *Viola blanda* of Willdenow, and big clumps of *Collinsonia canadensis* L. led to an investigation of the rich woods near by. The *Collinsonia* is a frequent plant throughout the region in such woods, and its presence was not unexpected, but further search showed an abundance of *Allium tricoccum* Ait., in excellent fruit, *Adiantum pedatum* L., *Galium lanceolatum* Torr., *Eupatorium ageratoides* L., *Sanguinaria canadensis* L., *Trillium cernuum* L., *Uvularia perfoliata* L. and mountain laurel. The woods were largely red oak, chestnut, cherry birch and sugar maple. Part had been cut over within ten years, while the other part had not felt the axe for at least forty, but there was little difference in the herbaceous flora beneath their shade.

Further up the hill were open pastures and clearings, with ledges which gave fine views of neighboring villages, and the level sky-line of the Windham county hills. Over the dry ledges grew *Woodsia obtusa* Torr. and the more common ebony spleenwort, while in moist shaded crevices grew *Asplenium Trichomanes* L. The dry clearings were full of *Gerardia quercifolia* Pursh in full bloom, very tall and handsome. *G. flava* L., *G. pedicularia* L. and *G. tenuifolia* Vahl were also present, but only the latter was abundant. *G. paupercula* (Gray) Britton we had found in our first swamp. Along with these were some very fine specimens of *Hieracium Gronovii* L., two or three feet high, and on one ledge in the hot sunshine grew *Muhlenbergia glomerata* Trin., undismayed by changed environment.

Down beyond the clearings was another stretch of rich woods, colder and more moist than the first, and here came the greatest surprises of the day. First of all was *Habenaria Hookeriana* Gray, with broad flat leaves and spikes of appressed green flowers, and fruit. Further search for this revealed as its neighbors *H. bracteata* R. Br. and *Corallorrhiza multiflora* Nutt., also well fruited, and several

specimens of each were collected, without seriously affecting the supply. There were also good colonies of *Monotropa Hypopitys* L., bright scarlet instead of golden yellow, their prevailing color. Along a brook were splendid plants of *Phegopteris hexagonoptera* Fée, only waiting the hand of the collector to transfer their beauty to the herbarium.

Reluctantly we left these woods, and investigated some of the mill-ponds beyond East Killingly, near the Rhode Island line. Two of these were well filled with *Myriophyllum ambiguum* Nutt., var. *capillaceum*, Torr. & Gray, while *Brasenia* was the prevailing plant in the others. The largest pond, Chestnut Hill Reservoir, was covered with the peltate leaves, which concealed the water and gave a peculiar leathery effect to its surface. I finally secured a specimen of this slimy plant, with leaves uneaten by the insects. Along the roadside thickets near the ponds were large quantities of *Apios tuberosa* Moench both in flower and fruit, and occasional plants of *Solidago Elliottii* T. & G. just coming into bloom.

Our next point was a steep unnamed hill near Elliotville, which we had visited in 1903. The eastern side of this is a big cliff of slightly metamorphosed sandstone, varying from 20 to 60 feet in height, with its white escarpment broken by fracture planes and caves, far surpassing in natural interest the more famous Wolf Den region of Israel Putnam in the adjoining town of Pomfret. In the woods here grew an abundance of *Clematis verticillaris* DC. and *Oryzopsis melanocarpa* Muhl. The westerly side of the hill proved ordinary and uninteresting, except for a curious side-hill peat-bog, caused probably by some hidden spring. Mr. Spalding has since found a large tree of *Betula papyrifera* Marsh on the southwest corner of this hill.

Whetstone Brook flows through the little valley below, on its way to join the Quinebaug River. In one of its tributaries grew *Sium Carsonii* Durand, but it did not seem to flourish in the main brook, where the water was too deep or the current too swift for this lazy degenerate of a worthy type. The brook gets its name from the easily cleaving, fine-grained sandstone of the region, and flows through rather ordinary meadows full of *Carex stricta* Lam., to the exclusion of most other species. There were fine colonies of *Sparganium americanum* Nutt. in some places, and in others there were *Xyris flexuosa* Muhl., *Peltandra*, *Decodon*, and *Rhexia*. At our 1903 visit we found large quantities of *Ranunculus aquatilis* L. var. *trichophyllus* Gray,

exceptionally large specimens, but we did not find it this time, probably because it was too late. *Lonicera caerulea* L. is a frequent shrub along the meadows.

Our last collecting for the day was in Putnam, Conn., where we excited the distrust of the natives by groping successfully in the dusk of early nightfall for *Vernonia noveboracensis* Willd., and *Liatris scariosa*, Willd., conspicuous plants which we had located on the morning journey, and reserved for our homeward way.

All in all, we considered the day a very successful and enjoyable one, and the region well worth further exploration. Most of the plants mentioned are represented by specimens in my collection or Mr. Spalding's, and although but few are distinctly rare, many of them belong in that larger class so well known to botanists as "interesting."

I am indebted to Mr. Walter Deane for kindly assistance in identifying the *Myriophyllum* and the *Sparganium*.

Boston, Massachusetts.

Four Introduced Plants at Cambridge, Massachusetts.— On 31 July of this year I noted, beneath a hedge-row along a street in Cambridge, a specimen of *Neslia paniculata* (L.) Desv., a crucifer with small, globose, indehiscent, reticulated silicles. The specimen was a small one but the distinctive fruit made it easily determinable. I have gathered it in better condition and greater abundance on docks at Quebec, 31 August, 1904. *Thymus Serpyllum* L. was found in abundance in a plot of grass land in Cambridge on 23 July of this year, and on 8 August another patch about a half-mile away, across the Charles River, near Soldiers' Field in Brighton. On 8 August I came across a bush of *Colutea arborescens* L. escaped by a roadside near Mt. Auburn Cemetery. *Epilobium hirsutum* L. is well established near Glacialis Pond, Cambridge. Specimens of these plants are in my herbarium.— Arthur Stanley Pease, Cambridge, Massachusetts.

New Edition of Gray's Manual.— We have received just as we are going to press the seventh edition (illustrated) of Gray's Manual,[1] which will be reviewed in a subsequent issue of Rhodora.

[1] A Handbook of the Flowering Plants and Ferns of the Central and Northeastern United States and adjacent Canada rearranged and extensively revised by Benjamin Lincoln Robinson and Merritt Lyndon Fernald. American Book Co., New York. $2.50.

PRELIMINARY LISTS OF NEW ENGLAND PLANTS,—XXII.[1]

M. L. Fernald.

[The sign + indicates that an herbarium specimen has been seen; the sign − that a reliable printed record has been found.]

NAJADACEAE.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Najas flexilis (Willd.) Rostk. & Schmidt	+	+	+	+	+	+
" " var. robusta Morong				+		
" gracillima (A. Br.) Magnus				+	+	+
Potamogeton alpinus Balbis	+	+	+	+		+
" americanus C. & S.	+	+	+	+	+	+
" " var. novaeboracensis (Morong) Benn.						+
" amplifolius Tuckerm.	+	−	+	+	+	+
" angustifolius Berchtold & Presl			+	+		−
" " var. connecticutensis (Robbins) Benn.			+			+
" bupleuroides Fernald	+	+	+	+	+	+
" confervoides Reichenb.	+	+	+	+		
" crispus L.				+		−
" dimorphus Raf.	+	+	+	+	+	+
" epihydrus Raf.	+	+	+	+	+	+
" " var. cayugensis (Wiegand) Benn.	+					+
" × Faxoni Morong			+			
" filiformis Pers.	+		+			
" foliosus Raf.	+	−	+	+	+	+
" " var. niagarensis (Tuckerm.) Morong	+	+	+			
" Friesii Rupr.			+	+		+
" gemmiparus Robbins	+			+	+	+
" heterophyllus Schreb.	+		+	+	−	+
" " forma graminifolius (Fries) Morong	+	+	+	+	+	+
" " forma longipedunculatus (Merat) Morong	+		+	+	+	+

[1] Printed in Rhodora as supplementary matter.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
Potamogeton heterophyllus forma maximus Morong	+	+		+		+
" " forma myriophyllus (Robbins) Morong	+			+	+	−
" " forma terrestris Schlecht.	+		+			+
" Hillii Morong						+
" hybridus Michx.	+	+	+	+	+	+
" " var. multi-denticulatus (Morong) Asch. & Graebn.						+
" lateralis Morong				+		+
" lucens L.	+		+	+		+
" mysticus Morong				+		
" natans L.	+	+	+	+	+	+
" × nitens Weber	+	+		+		
" Oakesianus Robbins	+	+	+	+	−	+
" obtusifolius Mertens & Koch	+		+	+		+
" pectinatus L.	+	+	+	+	+	+
" perfoliatus L.	+					
" praelongus Wulfen	+	+	+	+		+
" pulcher Tuckerm.	+		−	+	+	−
" pusillus L.	+	+	+	+	+	+
" " var. polyphyllus Morong	+			+		
" " var. Sturrockii Benn.	+		+	+		+
" " var. tenuissimus Mertens & Koch	+	+	+	+		
" Richardsonii (Benn.) Rydb.	+	+	+			+
" Robbinsii Oakes	+	+	+	+	+	+
" rutilus Wolfgang	+		+			
" × spathaeformis Tuckerm.				+		
" strictifolius Benn.	+	+	+	+		
" Vaseyi Robbins	+		+	+		+
" zosterifolius Schum.	+		+	+	−	+
Ruppia maritima L.	+	−		+	+	+
Zannichellia palustris L.	+	+	−	+	+	+
" " var. pedunculata J. Gay				+		
Zostera marina L.	+	−		+	+	−

JUNCAGINACEAE.

Scheuchzeria palustris L.	+	+	+	+	+	+
Triglochin maritima L.	+	−		+	+	+
" palustris L.	+					

Notes upon the above List.

Potamogeton confervoides Reichenb. This species (as *P. Tuckermani* Robbins) is listed without station in J. L. Bennett's Plants of Rhode Island. There is no specimen in Mr. Bennett's herbarium, and the occurrence of this unique species chiefly in subalpine or very cold ponds indicates that its Rhode Island record is extremely doubtful.

P. perfoliatus L., although reported from all the New England states, has been examined only from Maine. All the material from the other New England states seen by the writer has been either *P. bupleuroides* Fernald or *P. Richardsonii* (Benn.) Rydb.

Many minor hybrids are recognized by Old World students of *Potamogeton*. Little has been done in America to make out our hybrid forms and most such plants are at present omitted from the list.

Suggestions for Special Observation.

Najas flexilis (Willd.) Rostk. & Schmidt, var. *robusta* Morong. This extreme form is known in New England only from ponds of eastern Massachusetts. It is found, however, in New York and should be sought in Rhode Island and Connecticut.

Najas guadalupensis (Spreng.) Morong, quickly distinguished from *N. flexilis* by its dull conspicuously reticulated seed, extends northward from Tropical America to eastern Pennsylvania, and has recently been reported from southern New York. It is to be expected in southeastern Massachusetts and Rhode Island.

Potamogeton angustifolius Berchtold & Presl, var. *connecticutensis* (Robbins) Benn. (*P. lucens*, var. *connecticutensis* Robbins) has the 3-keeled fruit of *P. angustifolius* but differs in its greater size, its fruits being 4–4.5 mm. long, while those of *P. angustifolius* are 3–4 mm. long. The variety is known in Vermont and Connecticut, and should be sought in central and western Massachusetts.

P. epihydrus Raf., var. *cayugensis* (Wiegand) Benn. (*P. Nuttalii*, var. *cayugensis* Wiegand) occurs in eastern Maine, in Connecticut, and in Lake Memphremagog, Quebec, and is to be sought in lakes of New Hampshire, Vermont, and western Massachusetts. It differs from the common *P. epihydrus* (*P. pensylvanicus* Willd., *P. Nuttalii*

C. & S.) in its larger floating leaves (29–41-nerved), its broader submersed leaves (9–13-nerved) and its large fruit (3.5–4.5 mm. long).

P. filiformis Pers. occurs locally in northern Maine and northern Vermont. In Maine and Quebec it is apparently confined to shallow ponds and streams with marly bottoms, and it should be sought in such situations in northern New Hampshire.

P. gemmiparus Robbins is frequent in slow streams and pools through southern Maine and it occurs in eastern and central Massachusetts, Rhode Island, and northeastern Connecticut. It should, therefore, be found in southern New Hampshire.

P. heterophyllus Schreb. The different forms are apparently due in great part to the conditions under which they grow and probably are all of more general distribution than the herbaria indicate.

P. interruptus Kit., differing from *P. pectinatus* in its strongly keeled fruit, occurs in brackish waters of eastern New Brunswick and also in Michigan. Search may readily show it to be on the New England coast as well.

P. lateralis Morong, occurring in eastern Massachusetts and in northern Connecticut, is to be sought, naturally, in Rhode Island.

P. obtusifolius Mertens & Koch, frequent in north-central Maine and in Vermont, should be sought in northern New Hampshire. In Maine it prefers clear cold streams.

P. polygonifolius Pourret, a common species of Eurasia, Greenland, and even of Africa and Australia, occurs in Newfoundland and on the coast of Nova Scotia. It has the aspect of a very reduced *P. pulcher*, with extremely slender spikes, the tiny fruits being only 1.5–2 mm. long. It is to be watched for in eastern Maine.

P. pulcher Tuckerm. This distinct species is frequent in eastern Massachusetts, and it is known from southern Maine and from Brattleboro, Vermont (according to Morong). It is, therefore, to be expected in southern New Hampshire.

P. pusillus L., vars. *polyphyllus* Morong and *Sturrockii* Benn., likewise, should be looked for in southern New Hampshire.

P. rutilus Wolfgang, one of our rarest species, is known from the St. Francis River in northern Maine and from a single station in Lake Champlain. It resembles very slender extremes of *P. pusillus*, but has much longer stipules, which are persistent and rather conspicuous; and its sharp-acuminate leaves are almost erect.

P. Vaseyi Robbins is apparently more common than generally supposed and is probably well distributed in southern New England.

Triglochin maritima L., in spite of its usually maritime habitat, is frequent on wet shores and in mossy swamps of northern and north-central Maine and it also occurs in swamps of interior New York. In Aroostook County, Maine, it is associated in Larch and Arbor Vitae Swamps with *Cypripedium hirsutum* Mill, *Valeriana uliginosa* (T. & G.) Rydb., &c., and it may be looked for in similar situations in northern New Hampshire and Vermont.

T. palustris L. is also of wide distribution in Maine. It is a common plant of limy or slightly brackish wet places in the northern section of the state as well as in northern New Brunswick and Quebec; and it follows the coast, in brackish marshes, to Wells, near the New Hampshire border. The species may be confidently sought on the coast of New Hampshire as well as in marly bogs of northern New Hampshire and Vermont.

GRAY HERBARIUM.

MEETING OF THE JOSSELYN BOTANICAL SOCIETY.— The fourteenth annual meeting of the Josselyn Botanical Society of Maine was held at Manset, Mt. Desert Island, Maine, from August 4th to 6th. About a dozen members and guests were present. Unfortunately the weather did not prove as favorable as was hoped, but in other respects the meeting was very successful. Excursions were made to Great Cranberry Island, Bass Harbor, the Sea Wall, Sargent Mountain, Flying Mountain, and Robinson Mountain. The Mt. Desert region is as well studied as any area of similar size in the state, hence it was not expected that any real additions to the local list would be made, save such species as may have been described since the publication of the Flora of Mt. Desert. In this, however, the Society was most agreeably disappointed, and the following species are believed to represent real additions to the flora of the island. I am indebted to Mr. Ora W. Knight for the determination of the Carices.

Carex Bebbii Olney.
" *lurida* Wahl., var. *gracilis* Bailey.
" *scoparia* Schkuhr, var. *condensa* Fernald.
" *vesicaria* L., var. *monile* Fernald.
Vicia tetrasperma L.
Echinospermum Lappula Lehm.
Campanula uliginosa Rydb.

A list of the plants seen or collected during the meeting, containing stations for the rarer species, will soon be issued as Bulletin 2 of the Society.— EDWARD B. CHAMBERLAIN, Cumberland Center, Maine.

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Gray's Manual of Botany—NEW EDITION

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